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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/883,671 | 06/18/2001 | Jin-Meng Ho | TI-31701 | 1028 |

23494 7590 01/11/2005

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| EXAMINER |
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
JUNTIMA, NITTAYA

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| ART UNIT | PAPER NUMBER |
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2663

DATE MAILED: 01/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|-------------------------------|---|--|
| Office Action Summary | Application No. 09/883,671 | Applicant(s)  HO, JIN-MENG | |
| | Examiner Nittaya Juntima | Art Unit 2663 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 June 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 1-5 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6-7, 9-13, 16-17, 19-20 is/are rejected.
- 7) ☒ Claim(s) 8, 14, 15, 18 and 21 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-5, drawn to arbitration scheme for joining a piconet, classified in class 370, subclass 461.

II. Claims 6-21, drawn to channel allocation scheme, classified in class 370, subclass 347.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, invention I has separate utility such as an arbitration scheme for joining a piconet which does not require the channel allocation scheme of invention II.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with Mr. Ronald Neerings on 1/3/2005 a provisional election was made without traverse to prosecute the invention II, claims 6-21. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-5 are

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withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Oath/Declaration

2. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because: the claim benefit of a U.S. provisional application serial number 60/232,757 as stated in page 1 of the specification under 35 U.S.C §119(e) is not indicated in the oath/declaration filed on 6/18/2001.

Claim Objections

3. Claims 7-8 and 19-21, are objected to because of the following informalities:

- in claims 7 and 20, ll 1, “minislots” and “comprise” should be changed to “minislots” and “comprises,” respectively;
- in claim 8, “said” should be added after “per” to reference the slot recited in claim 7;
- in claim 19, ll 3, “slave” should be changed to “slaves;”
- in claim 21, ll 4, “minislots” should be changed to “minislots.”

Appropriate correction is required.

Information Disclosure Statement

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4. Because the IEEE 802.15.1 standard was cited throughout the specification, a copy of the standard with relevant sections is requested as IDS.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 6 and 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Chuah (USPN 6,567,416 B1).

Per claim 6, Chuah teaches a method comprising the steps of:

Transmitting a first frame (a downlink frame n+1 in Fig. 5, col. 13, ll 31-38) from the master unit (AP, e.g. AP 236 in Fig. 2, col. 9, ll 43-46), the first frame provides information (transmit permits 656 in Fig. 6D, col. 15, ll 17-38) to one or more slave units (remote nodes #3 and #5, col. 15, ll 17-38) from among the plurality of slave units (remote units 232 in Fig. 2, col. 9, ll 26-30) addressed by the first frame on the maximum transmission time in minislots (minislots are not defined, read on slots specified in each transmit permit) each one of the one or more slave units may transmit in sequence after the reception of the first frame. See further col. 11, ll 66-col. 12, ll 1-15.

Transmitting a second frame (a downlink frame n+2 in Fig. 5, col. 13, ll 31-38) from the master unit (AP, e.g. AP 236 in Fig. 2, col. 9, ll 43-46), the second frame is addressed to a

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particular slave unit (a remote node must be included in a transmit permit 656 of a subframe of a downlink frame n+2, col. 14, ll 10-11 and col. 15, ll 17-38) from among the plurality of slave units (remote units 232 in Fig. 2, col. 9, ll 26-30) and provides information (transmit permits 656 in Fig. 6D of a downlink frame n+2, col. 14, ll 10-11 and col. 15, ll 17-38) to that particular slave unit on the maximum transmission time it has in minislots (minislots are not defined, read on slots specified in the corresponding transmit permit) following reception of the second frame. See further col. 11, ll 66-col. 12, ll 1-15, col. 13, ll 31-38.

Claim 19 is a network claim corresponding to method claim 6, and is therefore rejected under the same reason set forth in the rejection of claim 6.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 7, 9-11, 13, 16-17, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chuah (USPN 6,567,416 B1).

Per claims 7, 10, and 20, Chuah fails to teach that the minislots each comprises a frame transmission time unit which is smaller than the size of a slot used by units compliant with IEEE 802.15.1 standard, and that the MAC protocol is backward compatible with and supports legacy IEEE 802.15.1 compliant slave units using slots as frame transmission time units.

However, Chuah discloses that any MAC format could be used (col. 14, ll 38-42). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify the teaching of Chuah to include that the minislots each comprises a frame transmission time unit which is smaller than the size of a slot used by units compliant with IEEE 802.15.1 standard and that the MAC protocol is backward compatible with and supports legacy IEEE 802.15.1 compliant slave units using slots as frame transmission time units as long as it does not yield any unexpected results, since such modification would have involved a mere change in slot size and a different field of use, and is within the level of ordinary skill in the art.

Per claim 9, Chuah teaches that the slave units can perform frame transmissions across multiple minislots with no interframe spaces in between the multiple minislots (col. 15, ll 28-33).

Per claim 11, Chuah teaches that the master unit (AP) controls the allocation of minislots to the plurality of slave units (col. 15, ll 33-38).

Per claim 13, Chuah teaches transmitting a data-no-acknowledgment/data-acknowledgment frame (a downlink frame that includes transmit permits 320 and acknowledgements for data sent in the previous uplink frame 340 shown in Fig. 3) having a field (transmit permits 320) that when transmitted by the master unit (AP) provides to the slave unit (remote node, e.g. remote node #5) receiving the transmission a piggybacked permit of the maximum transmission time in minislots (slots) allowed for the slave receiving the frame. See col. 11, ll 66-col. 12, ll 1-15 and col. 15, ll 17-33.

Per claim 16, Chuah teaches a method comprising the steps of:

Allowing one or more slave units (remote nodes #3 and #5) from among the plurality of slave units (remote units 232 in Fig. 2) to use slots (slot #1 through slot #5) as frame

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transmission time units. See col. 15, ll 17-38, and further col. 9, ll 26-30 and 43-46, and col. 13, ll 31-38.

Allowing one or more slave units (contending remote unit(s)) from among the plurality of slave units (remote units 232 in Fig. 2) to use minislots (reservation minislots) which are smaller than the slots as their frame transmission time units. See col. 11, ll 66-col. 12, ll 1-15 and col. 17, ll 14-38.

Chuah does not teach that one or more slave units using slots as frame transmission time units only support the IEEE 802.15.1 standard.

However, it would have been obvious to one skilled in the art at the time the invention was made to modify the teaching of Chuah to include that one or more slave units using slots as frame transmission time units only support the IEEE 802.15.1 standard as recited in the claim as long as it does not yield any unexpected results, since such modification would have involved a different field of use, and is within the level of ordinary skill in the art.

Per claim 17, Chuah teach that the master unit (AP) transmits a first type of frame (a downlink frame with minislots information for the next uplink frame 350) to a slave unit (a remote unit that receives the broadcast minislot information) among the plurality which provides information to that particular slave unit on the maximum transmission time it has in minislots following reception of the first type of frame. See col. 11, ll 66-col. 12, ll 1-15, and col. 17, ll 19-24 and 35-38.

9. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chuah (USPN 6,567,416 B1) in view of Callaway et al. ("Callaway") (USPN 6,275,500 B1).

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Per claim 12, Chuah does not teach that two of the slave units from among the plurality of slave units can communicate directly with each other.

However, Callaway teaches that two slave units can communicate directly with each other (col. 3, ll 12-19). Therefore, it would have been obvious to one skilled in the art to include that two of the slave units from among the plurality of slave units can communicate directly with each other as recited in the claim. The motivation/suggestion to do so would have been to provide higher system throughput without the intercession of the master as taught by Callaway (col. 3, ll 19-22).

Allowable Subject Matter

10. Claims 8, 14-15, 18, and 21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nittaya Juntima whose telephone number is 571-272-3120. The examiner can normally be reached on Monday through Friday, 8:00 A.M - 5:00 P.M.

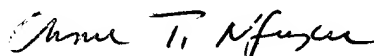
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chau Nguyen can be reached on 571-272-3126. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Nittaya Juntima
January 5, 2005

NJ



CHAU NGUYEN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600